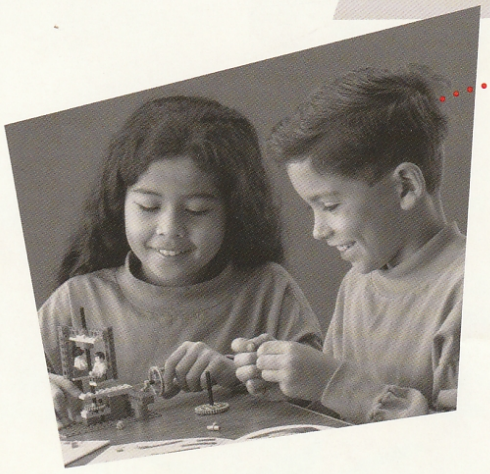
MAKING CONNECTIONS 1994



Integrating Math, Science and Technology for Elementary and Secondary Grades.

LEGO dacta
The *educational* division of The LEGO Group

THE LEGO DACTA AND LEARNING CONNECTION

LEGO Dacta, the educational division of the LEGO Group, can help you connect the worldwide appeal of the LEGO® brick to exciting hands-on learning in your classroom. LEGO DACTA® building sets combine the famous building brick with special elements, sensors, computers, and curriculum materials to create one of the most powerful learning environments available.

All LEGO DACTA products and instructional materials are designed and tested by educators and connect to specific curriculum needs in science, mathematics and technology. The student activities promote cooperative learning through different types of activities and challenge student teams to apply their knowledge and skills to solve problems. Students connect their learning to the real world by building and operating realistic models of actual machines and devices.

Students at any level, from beginner to advanced, can make a powerful connection to learning with LEGO DACTA educational materials. From simple machines sets to models that connect to the computer, LEGO DACTA materials offer students the kind of learning that really counts.

Come on! Make the connection!

Grade Levels: Please note, grade levels listed are meant as guidelines only. You know your students the best and can judge what is appropriate for them.

The Control Lab™ 9 volt electrical system is **NOT** compatible with our 4.5 volt LEGO® TC logo and LogoWriter® Robotics electrical system.

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SIMPLE MACHINES
GRADES 3-6

Problem Solving, Physical Science, Applied Math

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PRE-COMPUTER CONTROL
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Problem Solving, Science

New

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MOTORIZED MACHINES & PNEUMATICS
GRADES 4 & UP

Problem Solving, Technology, Physical Science, Simple Machines, Science

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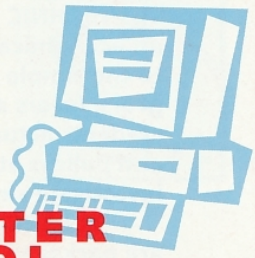

COMPUTER CONTROL
GRADES 4-12

Computer Control means that students can control their models using a computer. The system is based on a special interface box through which students can send signals from the computer to LEGO® motors and lights, and receive information back from different LEGO DACTA® sensors.

TECHNIC Control O 4.5VOLT
APPLE, MS-DOS

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Computer Control Components 4.5VOLT & 9VOLT
Combinations of the computer control components available for separate purchase are shown here.
Pages 28-29

EXTRA PARTS
An assortment of over 50 different extra part sets are available for purchase separately.
Pages 30-31

TECHNIC MINI-SERIES

GRADES 3-4

The TECHNIC Mini-Series sets provide an economical hands-on introduction to the simple machine concepts of gears, levers and pulleys. Elementary students actually see gears, levers and pulleys at work as they build and investigate simple machines.

The TECHNIC Mini-Series sets are packaged for small group use and classroom lessons. Classroom packs accommodate 24 students working in groups of two. Three teacher guides, which each contain fully prepared lesson plans, suggested solutions and assessment ideas, are available.

Working with the TECHNIC Mini-Series sets helps prepare your students for the more comprehensive TECHNIC I set (#1030) in the upper elementary grades.

9642
Lever Classroom Pack
$150.00 12% SAVINGS!

SPECIAL OFFER!

Complete instructional pack for 24 students, working in groups of two, to learn the concepts of the three classes of levers, and apply them in problem solving situations.

Includes:
- 12 Lever sets (#9612)
- **Free** 20-page comprehensive Teacher Guide, #9622 ($5.00 value)
- **Free** storage bin ($12.50 value)

9640
Gear Classroom Pack
$150.00 12% SAVINGS!

SPECIAL OFFER!

Complete instructional pack for 24 students, working in groups of two, to learn the concepts of gearing up and gearing down, and apply them in problem solving situations.

Includes:
- 12 Gear sets (#9610)
- **Free** 20-page comprehensive Teacher Guide ,#9620 ($5.00 value)
- **Free** storage bin ($12.50 value)

9644
Pulley Classroom Pack
$150.00 12% SAVINGS!

SPECIAL OFFER!

Complete instructional pack for 24 students, working in groups of two, to learn the concepts of belt drives and fixed/movable pulleys, and apply them in problem solving situations.

Includes:
- 12 Pulley sets (#9614)
- **Free** 20-page comprehensive Teacher Guide,#9624 ($5.00 value)
- **Free** storage bin ($12.50 value)

NEW VIDEOTAPE

"Simple Tools For Powerful Learning" is available free on a loan basis.

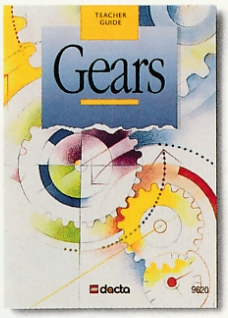
9610
Gear Set $12.50

Two students working together to learn about gears hands-on.

- 67 building elements and gears
- Transparent storage tray
- Two building cards with step-by-step instructions
- Seven models can be built with materials provided

9620
Gear Teacher Guide $5.00

- 20-pages with 10 lesson plans
- Introductory gear activities
- Problem solving activities based on gear concepts with suggested solutions and assessment ideas



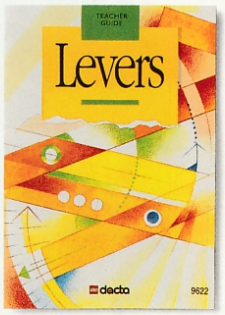
9612
Lever Set $12.50

Two students working together to learn about levers hands-on.

- 62 building elements and special weighted brick
- Transparent storage tray
- Two building cards with step-by-step instructions
- Seven models can be built with materials provided

9622
Lever Teacher Guide $5.00

- 20-pages with 7 lesson plans
- Introductory lever activities
- Problem solving activities based on lever concepts with suggested solutions and assessment ideas



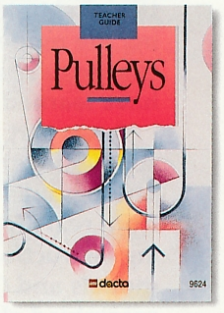
9614
Pulley Set $12.50

Two students working together to learn about pulleys hands-on.

- 75 building elements and pulleys
- Transparent storage tray
- Two building cards with step-by-step instructions
- Six models can be built with materials provided

9624
Pulley Teacher Guide $5.00

- 20-pages with 12 lesson plans
- Introductory pulley activities
- Problem solving activities based on pulley concepts with suggested solutions and assessment ideas



To Order Call:
1-800-527-8339

TECHNIC I

GRADES 4-6

TECHNIC I gives students a hands-on introduction to the fundamental concepts of simple machines such as gears, levers and pulleys, plus friction, centrifugal force, steering systems and much more.

Students explore important concepts by designing and building simple models. They investigate the properties of simple machines by manipulating the models. Practical problems challenge students to apply what they have learned.

Three-part activity cards supplied with each set feature (1) photographs of simple machines from real life, (2) step-by-step building instructions for simple machine models and (3) photographs of an assembled challenge model based on simple machines.

The TECHNIC I Activity Center (item #9603) is designed to provide exciting student activities and detailed teacher support for a wide variety of physical science areas. It is a natural extension to the TECHNIC I (item #1030) set, providing a total of 110 activities for your students.

1030

TECHNIC I Set $60.00

- 179 elements including gears, beams, pulleys, wheels, and more
- 20 student activity cards with step-by-step instructions to build 29 models and photographs of 23 additional challenge models
- Storage tray with transparent lid

1035

Teacher's Guide to TECHNIC I

$12.00

- 48 pages
- Summarizes principles from activity card models
- Suggests experiments and further activities

999

Simple Machines Curriculum

$26.00

- 102 pages
- Includes 12 complete lesson plans for in-depth study of simple machine concepts along with study masters, review sheets and Team Kit Care Record forms
- Developed by a curriculum team from a Minnesota school district

0704

TECHNIC I Classroom Pack $630.00

Price reflects a 10% discount, you save $70.

The TECHNIC I Classroom Pack combines ten TECHNIC I sets (item #1030) and the TECHNIC Activity Center (item #9603). Designed for a class of up to 20 students, this special combination includes:

- 10 TECHNIC I sets (item #1030) with accompanying activity cards
- TECHNIC I Activity Center (item #9603)
- Order one additional TECHNIC I set for every two additional students

SPECIAL OFFER!

9603

TECHNIC I Activity Center $100.00

The TECHNIC I Activity Center is a flexible product easily organized to suit your teaching needs. The activity cards are separated by activity type and are extensively cross-referenced for use in six physical science curriculum areas, plus a special enrichment section. Activities are easily reorganized into topic or theme areas, if desired.

- 110 activity cards
- Teacher guide and supplement
- Sturdy storage container

New Gear and Lever Overheads

See Page 15

☎ To Order Call: 1-800-527-8339

LEGO DACTA® SIMPLE CONTROL 9VOLT

GRADES 3-4

New

The LEGO DACTA Simple Control system consists of the TECHNIC Control Center (item #9753), the LEGO DACTA Simple Control Building Set (item #9702), and the LEGO DACTA Simple Control Activity Pack (item #9703). With this system, students can become familiar with programmable control without the use of a computer. They learn the concepts of timing and sequencing as they create and run simple programs to control the motor, lamp and sound elements in their models.

Simple Control curriculum materials provide a variety of hands-on activities with an emphasis on cooperative problem solving. Working in teams of two or three, students explore control concepts and then investigate the behavior of models built by following step-by-step instructions. Finally, student teams apply what they have learned as they invent and program models to solve challenging problems.

Science concepts addressed include motion, work, power, and energy. Motorized models include a rotating stage, an elevator, a robot floor plotter, and a walking dinosaur.

The TECHNIC Simple Control system includes new 9 volt* electrical components.

9702

LEGO DACTA Simple Control Building Set $67.50

- 220 elements, including gears, pulleys, beams, etc.
- 9 volt motor, lamp, and sound element with connecting leads
- 4 student activity cards with step-by-step model building instructions
- 4 photographs of additional challenge models
- Plastic tray with storage bins

9703

LEGO DACTA Simple Control Activity Pack

$44.00

- Designed for use with the LEGO DACTA Simple Control Building Set (item #9702) and the TECHNIC Control Center (item #9753)
- 44-page teacher guide with copymasters and notes
- 18 student activity cards and index card
  - 5 exploration cards (green)
  - 4 investigation cards (blue)
  - 9 problem solving cards (red)
- Suitable for grades 3-4
- Sturdy storage and display box

9753

TECHNIC Control Center $85.00

- Stores 2 programs in memory
- Uses six "C" batteries (not included)
- Controls up to three 9 volt motors, lamps or sound elements
- 4-page instruction booklet
- Automatic shutdown if inactive for two hours

***Note: The 9 volt electrical components of this system are not compatible with 4.5 volt components.**

☎ To Order Call: 1-800-527-8339

TECHNIC II 4.5 VOLT

GRADES 6-8

The TECHNIC II Set (item #1032) is designed to follow the TECHNIC I set in the instructional sequence. It extends the principles of simple machines by adding the concept of motorization. With a 4.5 volt* electric motor, students can bring their projects to life.

The TECHNIC II set is excellent for the study of physical science and power transmission. It contains a wide variety of power train connectors, such as a chain drive, a differential gear system and a universal joint, in addition to several sizes of regular gears.

The TECHNIC II set creates an awareness of the progression of technology and deepens the understanding of mechanical principles through the building of realistic motorized models.

Three-part activity cards supplied with each set feature (1) photographs of motorized machines from real life, (2) step-by-step building instructions for simple motorized models and (3) photographs of challenge models.

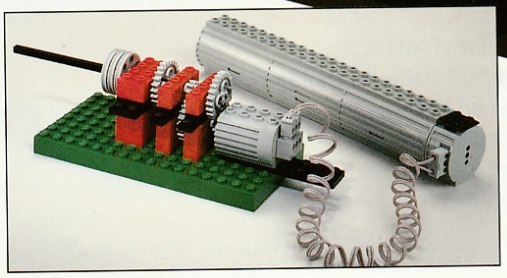
Hands-On Activities for Physical Science: TECHNIC II (#917), a 100-page binder of lesson plans and activities for motion, energy, and electricity units at the middle school level, is also available.

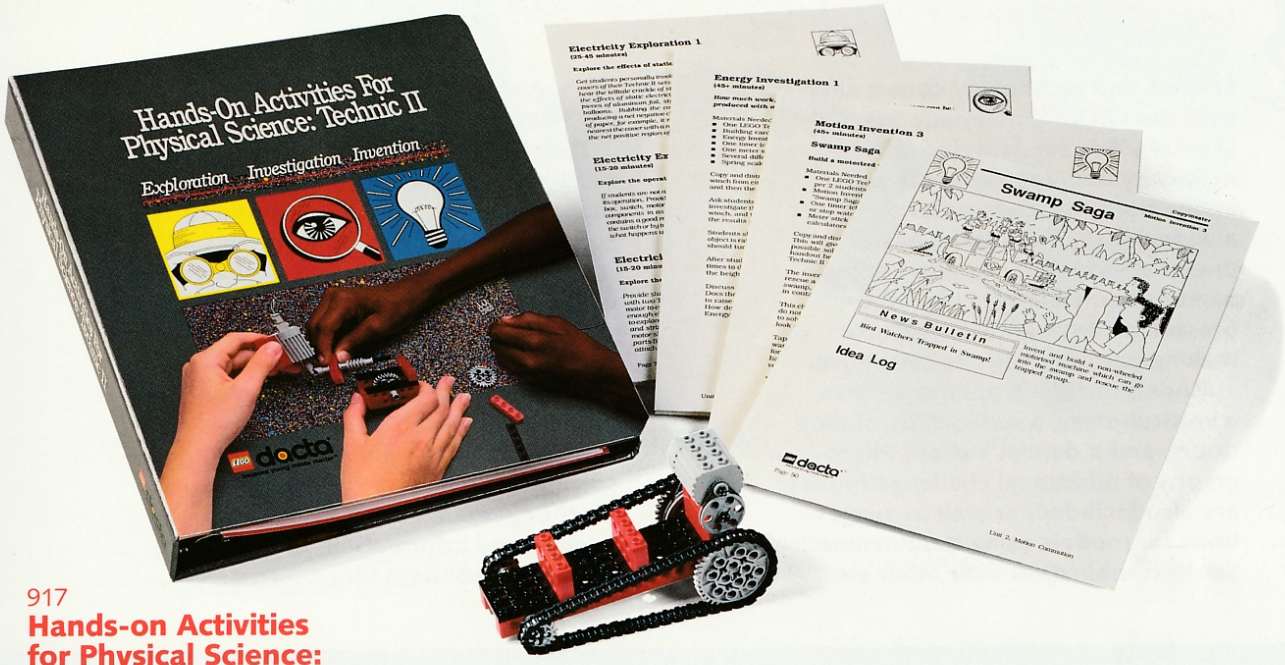
*Please note: the 4.5 volt and new 9 volt electrical systems are NOT compatible.

1032

TECHNIC II Set $80.00

- 278 elements including chain links, differential gear, worm gears, etc.
- 4.5 volt motor and battery box for three "C" batteries (batteries not included)
- 20 activity cards with step-by-step instructions to build 40 motorized models and photographs of 30 additional challenge models
- Storage tray with transparent lid





917
Hands-on Activities for Physical Science: TECHNIC II $36.50

This three-ring binder contains over 100 pages with 30 different activities to support middle school physical science instruction in the areas of motion, energy, work, power, and electricity. Activities of three types (exploration, investigation and invention) are divided into instructional units for flexible use. The binder also contains extensive background information and a supplement of additional useful material. Activities in the binder are designed for use with the TECHNIC II (item #1032) building set.

SPECIAL OFFER!

929
TECHNIC II Classroom Pack $752.85

Price reflects a 10% discount, you save $83.65.

- 10 TECHNIC II sets (item #1032) with accompanying activity cards, enough for 20 students working in teams of two.
- Hands-On Activities for Physical Science TECHNIC II Binder (item #917)
- Order one additional TECHNIC II set for every two additional students

1036
Teacher's Guide To TECHNIC II $12.00

- 48 pages
- Summarizes principles from activity card models
- Suggests problem solving ideas and further activities

To Order Call: 1-800-527-8339

PNEUMATICS
GRADES 4 AND UP

Science and technology comes alive with the LEGO® Pneumatic Set (#9604). This set contains all the necessary building elements and instructions for students to construct a wide variety of working models of pneumatic devices. By operating a hand pump, students send compressed air to pneumatic cylinders, making parts of their models move.

Models include a pneumatic vise, a vertical press, a scissors lift, sliding doors, and a dentist's chair. Photographs of additional challenge models are also included, as well as suggestions for models using the Pneumatic Set in combination with other sets, such as the TECHNIC I (#1030) and TECHNIC II (#1032).

The LEGO Pneumatic Activity Pack (#9606) includes teaching support materials for familiarizing middle school students with the concepts of pneumatics. It is also an excellent extension to the levers portion of a simple machines instructional unit. Activity cards of several different types provide a variety of experiences ranging from simple introductory exercises to open-ended problem solving challenges. A 24-page teacher guide contains pneumatic background information, teacher notes, and solution ideas.

9604
Pneumatic Set $34.00

- 124 elements, including pneumatic cylinders, hand pump, pneumatic switches, tubing, beams, connector pegs, and a variety of other building elements.
- 5 activity cards, each with photographs of actual pneumatic devices, step-by-step instructions to build a working pneumatic models, and a photograph of an additional challenge model.
- Combination card with photographs of suggested models built with the Pneumatic Set and other sets, such as the TECHNIC I (item #1030) and TECHNIC II (item #1032).

9606
Pneumatic Activity Pack $17.00

- 18 activity cards, plus a gray index card
- 24-page teacher guide

919
Pneumatic Classroom Pack $321.30
Price reflects a 10% discount, you save $37.50.

- 10 Pneumatic sets (item #9604) with accompanying activity cards
- One Pneumatic Activity Pack (item# 9606)
- Enough for 20 students working in teams of two. Order one additional Pneumatic set for every two additional students.

SPECIAL OFFER!

To Order Call: 1-800-527-8339

TECHNIC SUPPLEMENTAL SETS 4.5VOLT & 9VOLT

GRADES 4 AND UP

Several additional TECHNIC items are available to supplement instruction with all LEGO DACTA® TECHNIC Sets.

9605

4.5VOLT TECHNIC Resource Set

$206.00

- 1516 elements including many from the TECHNIC I (#1030) and TECHNIC II (#1032) (4.5 volt) sets
- Large storage trays
- Please note: Activity cards are not included with this set.

1038

TECHNIC Universal Buggy $63.50

- 117 elements including two 4.5 volt motors
- Step-by-step instructions to build two models of a steerable chassis
- Connects to TECHNIC Manual Control or to TECHNIC Control computer interface box

1039

TECHNIC Manual Control $63.50

- 39 elements, including three switch panels
- Battery box for three "C" batteries (batteries not included)
- Controls up to three 4.5 volt motors
- Step-by-step instructions for assembling different control panels

New

9609 9VOLT
Technology Resource Set $199.00

- 1,733 pieces including new elements such as: 9 volt motor and battery box, 9 volt wire system, cam wheels, axle extenders, and a metal crane hook.
- An excellent class/lab resource set for small and large projects.
- Please note: building instructions are not included in this resource set.
- Not compatible with 4.5 volt materials

New

971
Gear Transparencies
$20.00

- 11 transparencies to assist in teaching gear concepts
- Summaries and examples of 4 main gear concepts
- 2 gear problem challenge transparencies
- Background information included

972
Lever Transparencies
$15.00

- 6 transparencies to assist in teaching lever concepts
- Summaries and examples of the 3 classes of levers
- Background information included

To Order Call:
1-800-527-8339

LEGO® TC LOGO STARTER PACK 4.5VOLT

GRADES 4-6 • APPLE , MS-DOS

With LEGO® TC logo, teams of students use simple computer instructions such as ON, OFF, and WAITUNTIL to control the models they build from LEGO beams, gears, motors, sensors, and other elements. The LEGO TC logo Starter Pack contains all the necessary components for setting up a computerized LEGO building station in the classroom.

951 **Apple®** ~~$565.00~~ $452.00
966 **MS-DOS®** ~~$570.00~~ $456.00

SAVE 20%

Starter Pack Components include all shown on this page:

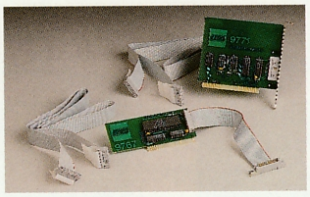
- **TECHNIC Control O building set** contains over 450 building elements including bricks, beams, gears, wheels, 2 touch sensors, one optosensor, one counting wheel, two motors and four lights. Eight building cards are also included.

- **Teacher's Guide** 153 pages with teacher tutorial, classroom management suggestions, lesson plans and activities.

- **Student Guides** 2 copies each of *Getting Started* (57-page beginner guide), *Making Machines* (30-page intermediate guide), and *Teaching the Turtle* (32-page more advanced guide.)

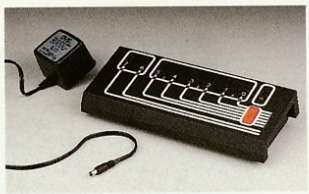
- **Setup guide** 13 cards with step-by-step instructions.

- **Software disks** copyable master disks in both 3.5" and 5.25" format.



- **Computer slot card and cable**

- **LEGO TC logo Reference Guide** 134-page manual with complete explanations and examples of all LEGO TC logo commands.
- **LEGO TC logo Quick Reference Guide** summarizes the most frequently used commands.



- **Interface box and transformer** includes six output ports, two input ports, and one test port.

See page 28 for information on ordering Starter Pack components separately.

- Computer controlled models: traffic light, car, starting gate, conveyor belt, carousel, washing machine, robot turtle
- Activities relate to science, mathematics, social studies, technology, computer science
- Designed for two to four students per set

System Specifications

- Apple IIe/IIGS: 64K minimum, one open slot in the computer (slot 3 is the default slot)
- MS-DOS: 256K minimum, one open slot (not microchannel), and CGA, MCGA,VGA or EGA display

LOGOWRITER® ROBOTICS

4.5VOLT

SPECIAL SAVINGS

GRADES 4-6 • APPLE, MS-DOS

LogoWriter Robotics software combines the power of the LEGO® TC logo commands with the word processing, math tools, graphics and color capabilities of the LogoWriter software.

If you are new to the Logo computer language, six LogoWriter project booklets provide a step-by-step introduction and offer you a selection of 95 activity cards with additional ideas for your use. Projects can be integrated into mathematics, language arts, social studies, science and computer classes.

Once you and your students are familiar with LogoWriter, you can integrate the LEGO models into their Logo projects. For example, students can:

- Create a merry-go-round that counts as it turns
- Design a car that measures distance
- Use a clock to time traffic lights
- Develop a conveyor belt that sorts and counts
- Create a robotic "turtle" that follows a path

(computer not included, see pages 18-19 for software and hardware information)

To Order Call: 1-800-527-8339

LOGOWRITER® ROBOTICS 4.5VOLT

SPECIAL SAVINGS

For one computer:
Individual Set ~~$275.00~~ $199.00

Item	Computer type and disk size
907	Apple® IIe/IIGS 5.25"
908	Apple IIe/IIGS 3.5"
909	MS-DOS® 5.25"
910	MS-DOS 3.5"

Contains:
- One LogoWriter Robotics disk
- LogoWriter Robotics Book with six projects for LEGO® TC logo models: the counting merry-go-round, geared car, traffic lights, "grocery store" conveyor belt with electric eye, and two-motor LEGO robot turtle
- Six Intermediate Project Booklets
- 95 Student Activity Cards
- Reference and Setup information

LEGO building set, slot card and interface box available separately (see facing page).

For two to six computers:
Lab Pack ~~$483.00~~ $349.00

Item	Computer type and disk size
903	Apple IIe/IIGS 5.25"
904	Apple IIe/IIGS 3.5"
905	MS-DOS 5.25"
906	MS-DOS 3.5"

Contains:
- Six LogoWriter Robotics disks (Choose one size for all six)
- LogoWriter Robotics Book with six projects for LEGO TC logo models: the counting merry-go-round, geared car, traffic lights, "grocery store" conveyor belt with electric eye, and the two-motor LEGO robot turtle
- Six Intermediate Project Booklets
- 95 Student Activity Cards
- Reference and Setup information

LEGO building set, slot card and interface box available separately (see facing page).

For more than six computers or for networked systems:
Site License ~~$690.00~~ $499.00

Item	Computer type and disk sizes
900	Apple IIe/IIGS 3.5" and 5.25"
902	MS-DOS 3.5" and 5.25"

Contains:
- Two LogoWriter Robotics Master disks with a license to make unlimited copies for your school and to use the software on networked computers*
- LogoWriter Robotics Book with six projects for LEGO TC logo models: the counting merry-go-round, geared car, traffic lights, "grocery store" conveyor belt with electric eye, and two-motor LEGO robot turtle
- Six Intermediate Project Booklets
- 95 Student Activity Cards
- Reference and Setup information

*You can control LEGO motors, lights and sensors on networked systems with this software solution but you must have a LEGO TC logo interface for each computer on which the LEGO models are to be run. See the listing on page 28 for information about purchasing additional interfaces.

For those who already own any LogoWriter Site License:

Expansion Pack ~~$143.00~~ $130.00

SPECIAL SAVINGS

Item	Computer type and disk sizes
911	Apple IIe/IIGS 3.5" and 5.25"
912	MS-DOS 3.5" and 5.25"

Contains:

- Two LogoWriter Robotics Master disks with a license to make unlimited copies for your school and to use the software on networked computers*
- LogoWriter Robotics Book with six projects for LEGO TC logo models: the counting merry-go-round, geared car, traffic lights, "grocery store" conveyor belt with electric eye, and two-motor LEGO robot turtle
- LogoWriter Robotics supplement for the LogoWriter Reference Guide

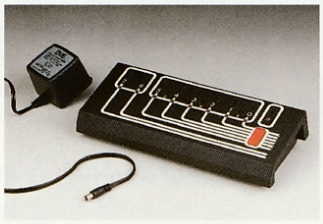
For Each Computer Station Controlling LEGO Models:

TCO Control Pack ~~$442.00~~ $354.00

Item	Computer type
915	Apple IIe/IIGS
916	MS-DOS

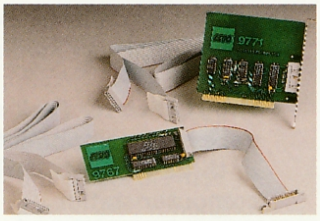
Contains:

TECHNIC Control 0 set with over 450 building elements, including bricks, beams, gears, and wheels. Computer control elements, including two touch sensors, one optosensor, one counting wheel, two motors and four lights, 8 step-by-step building instructions for 8 different models and photographs of six additional challenge models, carrying case with two storage trays.



- **Interface Box and Transformer**
  Includes six output ports, two input ports and one test port and independently controls up to three motors or six light bricks and two sensors.

  The transformer provides electrical power to the interface box and plugs into standard electrical sockets.



- **Slot Card and cable**
  Apple version for Apple IIe (requires 80 column/ 64K expansion card), IIGS or other compatible computer.

  MS-DOS for IBM® PC, PCXT, PCAT, PS/2 Model 25, PS/2 Model 30, Tandy® 1000SL,1000SX, 2500 and compatibles. Not for use with IBM PS/2 Models 50 and above or any other microchannel computer.

NEED ADDITIONAL STUDENT ACTIVITIES?

The LEGO TC logo Student Guides (Item#'s 954/964) contain beginner, intermediate and advanced activities for use with LEGO TC logo or LogoWriter® Robotics.

System Specifications:

- Apple:128K, one open slot in the computer (slot 3 is the default slot)
- MS DOS:384K, one open slot (not microchannel), and CGA, MCGA, VGA or EGA display

☎ To Order Call: 1-800-527-8339

TECHNIC CONTROL I

GRADES 7-9 • APPLE, MS-DOS

4.5VOLT

SAVE 20%

TECHNIC Control I Technology Pack

958 **Apple TCI Pack** ~~$652.00~~ $521.60
968 **MS-DOS TCI Pack** ~~$652.00~~ $521.60

The TECHNIC Control I Technology Pack (TCI) provides students in grades 7 through 9 with a hands-on problem solving environment to better understand the role of computers in today's technology. The projects enable students to form an in-depth understanding of control technology and include:

- **Construction: Gantry Crane, Suspension Bridge and Winch, Automatic Door**
- **Communication: Anemometer, Race Timing System, Bar Code Reader**
- **Manufacturing: Drill Press, Double Conveyor Sorting System, Gripping Robot Arm**
- **Transportation: Elevator, Line-Following Robot, Snowmobile**

The TCI Starter Pack contains all the necessary components for groups of two or three students each, working with one computer station.

Components include all materials pictured on page 21 (except the 002):

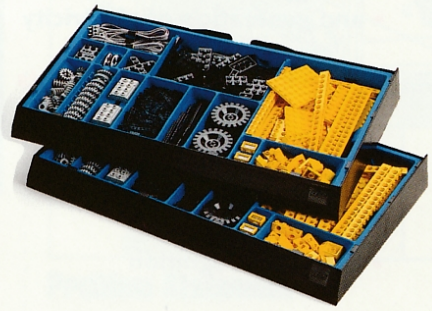
- **Two TECHNIC Control I Building Sets**
- **Computer slot card and cable**
- **TECHNIC Control I Resource guide**
- **Interface box and transformer**
- **Software disks and reference guides**

(Computer not included)

TCI Starter Pack Components:

TECHNIC Control I Resource Guide ▶

- Over 400 pages of student problem solving activities and teacher support materials for control technology applications.
- Teacher support materials include set up information, a technology curriculum introduction, illustrated building instructions, and one or more programming solutions for each activity.
- Addresses the major technology areas of construction, manufacturing, communication and transportation.
- Appropriate for physical science enrichment, applied mathematics, gifted programs and other subject areas.

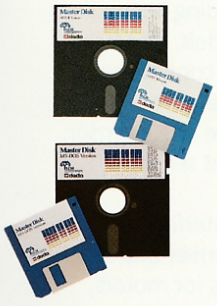


TECHNIC Control I Set ▲

- 404 elements, including two 4.5 volt motors, two optosensors and two counting wheels
- Step-by-step instructions to build five models: conveyor belt, robot arm, automatic door, ferris wheel, washing machine
- Storage tray with transparent lid
- Designed for two to three students

Interface box and transformer
includes six output ports, two input ports, and one test port.

Computer slot card and cable



Software disks
copyable master disks in both 3.5" and 5.25" format.

LEGO® TC logo Reference Guide
134-page manual with complete explanations and examples of all LEGO TC logo commands.

LEGO TC logo Quick Reference Guide
summarizes the most frequently used commands.

SPECIAL OFFER

002 **TCI Special Upgrade Offer** ~~$332.00~~ $298.80
Special upgrade to current LEGO TC logo and LogoWriter® Robotics users who already have an interface box and slot card for their computer. Recieve a FREE $75.00 TCI Resource Guide plus 10% off when you purchase two of the TCI building sets (Item #1090- see page 28).

TECHNIC Control I System Specifications

- Apple IIe/IIGS: 64K minimum, one open slot in the computer (slot 3 is the default slot)
- MS-DOS: 256K minimum, one open slot (not microchannel), and CGA, MCGA,VGA or EGA display.
  Not for use with IBM PS/2 models 50 and above or any other microchannel computer.

☎ To Order Call:
1-800-527-8339

LEGO DACTA® CONTROL SYSTEM 9VOLT

GRADES 5-6 • MACINTOSH, MS-DOS

New

Integrating Math and Science for Upper Elementary Grades

LEGO DACTA Control System combines:

- LEGO® elements
- a Macintosh or MS-DOS computer
- a special version of the Logo programming language
- new curriculum materials for grades 5 & 6

Students build their own data collecting models and then control them with a computer. Ideal for 5th and 6th grade science and math classes, LEGO DACTA Control System provides an opportunity for students to collect and manipulate mathematical data to reinforce important physical science principles.

LEGO DACTA Control System concentrates on exploration, investigation and invention activities in science concept areas of:

- linear motion (distance, time, and average speed)
- work, power, and energy (force, distance, and change in potential energy)
- and generation of electricity

Mathematics related concepts include:

- computation
- estimation
- measurement
- graphing
- pattern recognition

Activities focus on:

- hands-on cooperative learning
- the use of sensors for feedback and data collection
- mathematical manipulation of data
- the development of science process and problem solving skills

LEGO DACTA Control System Materials Include:

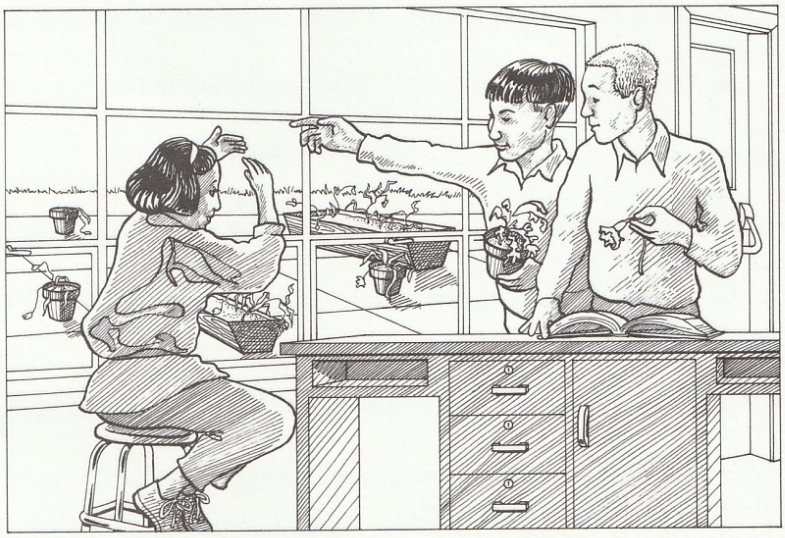
- LEGO elements and step-by-step building instructions for four models, one 9 volt motor, four connecting leads, one lamp, one sound element, one angle sensor, and one light sensor.

- Computer interface box with transformer and eight output ports for motors, lamps and sound elements; test port and stop button; and eight input ports for sensors. The interface box connects to the serial port of Macintosh and MS-DOS computers. The interface can also be used with lap top computers.

(continued on next page)

Sample Student Activity from LEGO DACTA Control Lab™

Define the Problem



Problem Statement

The student committee has decided to sell flowers on holidays as a way of raising funds. They need a system designed to grow plants all year around.

Controls for the system must maintain the temperature at an appropriate level for the flowers so they do not die over school vacations.

Design Brief

▶ Choose the type of flowers to grow (e.g.carnations).

▶ Design and build a greenhouse. Program a control system that operates the greenhouse.

The greenhouse design must include:

- Glazing to let in light energy.
- A floor and wall for storing heat energy (thermal mass).
- A method for venting the air.
- A temperature sensor.
- Computer controls that can be used to maintain a correct range of temperature for the flowers.

Additional Criteria

The greenhouse design can also include:

- A feedback system for showing the position of the vent.
- Automatic system controls to check the temperature and raise or lower the window vent.
- A graph that shows the greenhouse temperature and vent position (angle sensor feedback).

Building Ideas

If a sunny window is not available, increase the temperature quickly by placing two to four lamps inside the greenhouse and connecting the lamps to the test port.

To decrease the temperature faster when the window panel is open, swab cold tap water on the end of the temperature sensor with a piece of paper towel ; or attach a temperature sensor from another set to port 1 and dip it in cold tap water.

You must never drip water on any electrical part. Water should only touch the probe of the temperature sensor.

▶ Build the model shown in the building instructions 9701-1.

▶ Attach the outputs and inputs as shown in the instructions.

Motor	Port B
Temperature sensor	Port 1
Angle sensor	Port 6

▶ Attach the angle sensor if you want to have feedback on the vent position.

You can use lamps to simulate sunlight and give off heat energy.

The sound element is optional. If you wish to add it to your control system, attach it to Port A.

Programming Ideas

▶ Start LEGO DACTA® Control Lab software. Create a New Project.

If you wish to measure in degrees Fahrenheit, double-click on the `temp1` icon and select Fahrenheit from the Measure popup menu.

▶ Use the Setup Page to check the motor and temperature sensor.

While testing the temperature sensor and vent motor, you must decide the following:

- What type of flowers am I planting?
- What is the appropriate maximum and minimum temperature range for these flowers?
- At what temperature should the window vent open?
- At what temperature should the window vent close?

Refer to the *Quick Start Guide Appendix A* "Using the Angle Sensor" for more information.

If you are using the angle sensor, you must find out:

- At which rotational count is the vent open "far enough."
- At which rotational count is the vent closed "enough."

▶ Create a Control Panel to operate the greenhouse. Review the design brief specifications so that you include the important control features.

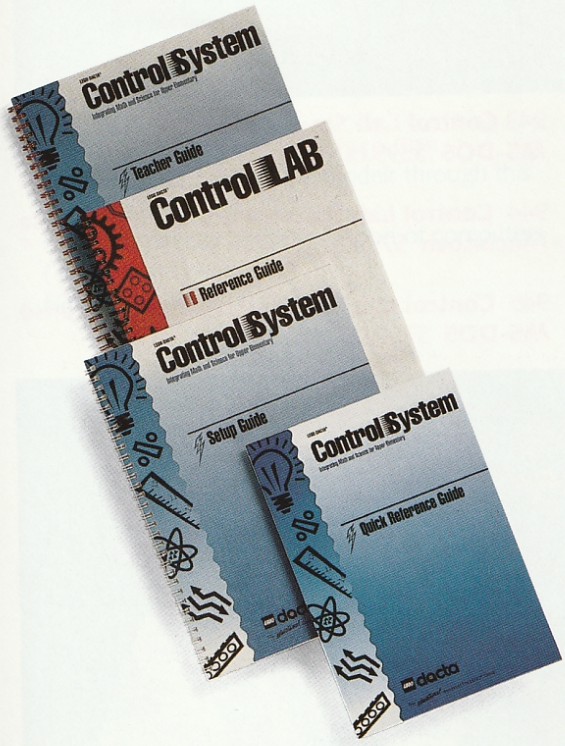
Refer to the *Quick Start Guide* section "Using the Graph Tool" for more information.

▶ If you are graphing the temperature and angle sensor feedback, add the graph to a project page.

▶ Then figure out the maximum and minimum y axis values to use for the graph.

LEGO DACTA Control System Software for Macintosh or MS-DOS Computers Includes the Following Features:

- Setup screen for easy testing of the motor, lamp, sound, and sensor connections
- Procedure page for writing and editing computer programs
- Command Center for carrying out commands and running programs
- Project pages for integrating clip art, text, and graphs into documentation; on-screen buttons and sliders for controlling the LEGO models can be placed here as well



LEGO DACTA Control System Curriculum Materials Includes:

- Set-up Guide for familiarization of software, interface box, motors, lamps, sound elements, and sensors
- Teacher Guide for providing exploration, investigation, and invention activities for students
- Reference Guide for detailed information on software commands and features
- Quick Reference Guide for a summary of most often used software features and commands

WHAT TO ORDER:

The Control System Starter Pack includes:

- Serial Interface & Cable
- Software (MS-DOS or Macintosh)
- Building Set
- Curriculum materials including a *Setup Guide, Teacher Guide, Reference Guide,* and a *Quick Reference Guide*
- Available with either a site license or individual license. A site license enables you to use the software on a network or any number of stand alone computers in your building.

976 **Control System Starter Pack Macintosh** $450.00

977 **Control System Starter Pack MS-DOS** $450.00

979 **Control System Starter Pack & Site License Macintosh** $600.00

980 **Control System Starter Pack & Site License MS-DOS** $600.00

NOTE: The 9 volt electrical system is NOT compatible with our 4.5 volt LEGO® TC logo and LogoWriter® Robotics electrical system.

System Requirements

Macintosh
System 6.0 or higher
1 megabyte of RAM
Finder 6.0 or higher
1 serial modem or printer port available
Color or monochrome monitor
Hard disk
High density drive required to load color version

MS-DOS
DOS 3.1 or higher
640K RAM (1 megabyte recommended)
Mouse
Mouse driver 6.24 or higher (Microsoft standard)
1 serial port (in addition to mouse port)
EGA color or monochrome monitor
Hard disk

☎ To Order Call: 1-800-527-8339

CONTROL LAB

9VOLT

GRADES 7-12 • MACINTOSH, MS DOS

New

LEGO DACTA® Control Lab™ combines:

- New LEGO® elements and sensors
- A special version of the Logo programming language
- A Macintosh® or MS-DOS® computer
- Curriculum materials for grades 7-12 technology education

With Control Lab students can:

- Build working models and control the models using a computer.
- Incorporate important technology concepts with open-ended design briefs.
- Construct and program models in five areas of technology education
- Learn through an interdisciplinary approach integrating science, math, language arts and social studies.

WHAT TO ORDER:

The Control Lab Starter Pack includes:

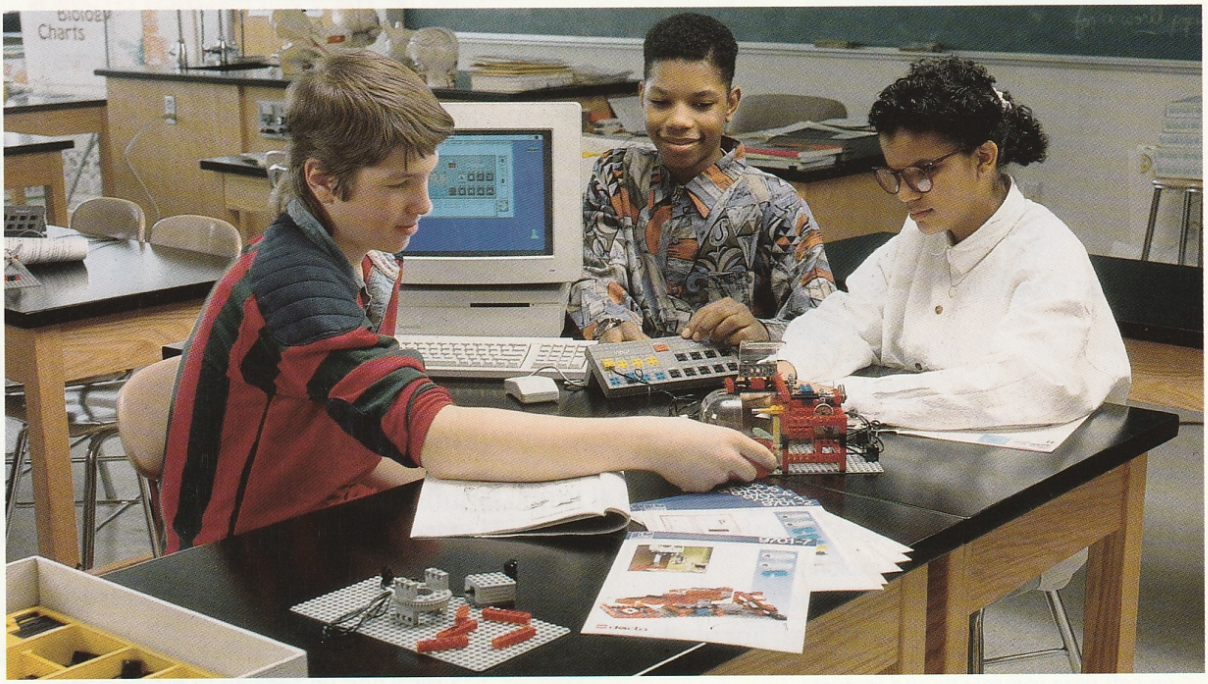
- Serial Interface & Cable
- Software (MS-DOS or Macintosh)
- Building Set with 527 pieces
- Curriculum materials including a *Setup Guide and Introductory Explorations*, *Quick Start Guide*, *Technology Investigations and Inventions*, and a *Reference Guide*
- Available with either a site license or individual license. A site license enables you to use the software on a network or any number of stand alone computers in your building.

942 **Control Lab Starter Pack Macintosh** $599.00

943 **Control Lab Starter Pack MS-DOS** $599.00

944 **Control Lab Starter Pack & Site License Macintosh** $750.00

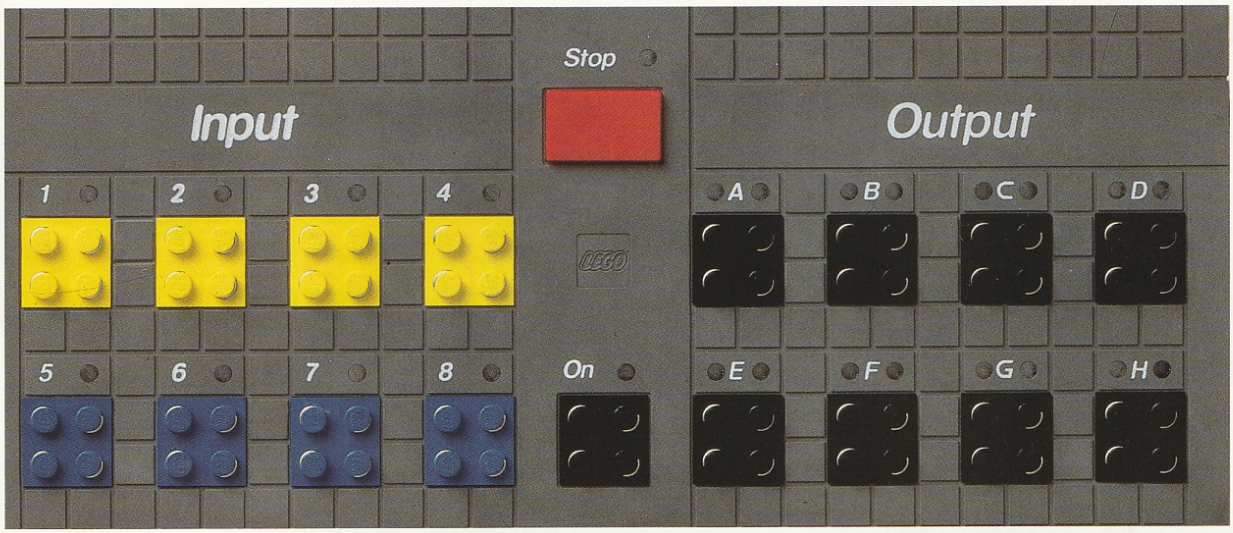
945 **Control Lab Starter Pack & Site License MS-DOS** $750.00



Concept	Control Lab Project
Manufacturing	Pick & Place Robot Arm
Bio-related Technology	Greenhouse
Communication	Color Code Reader
Construction	Motorized Vertical Lift Bridge
Transportation	Motorized Car & Dynamometer

NOTE: The 9 volt electrical system is NOT compatible with our 4.5 volt LEGO® TC logo and LogoWriter® Robotics electrical system.

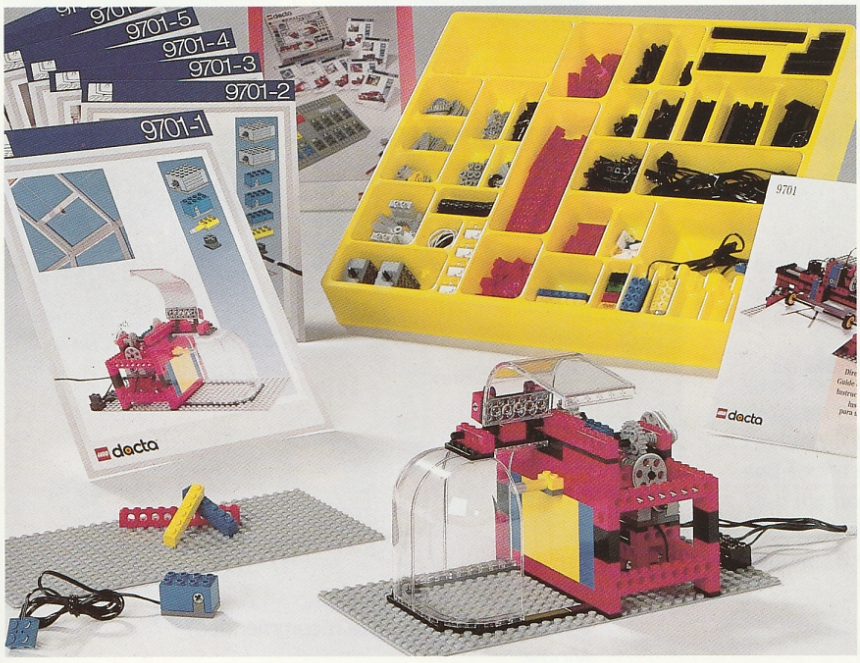
Control Lab Serial Interface



LEGO DACTA® Serial Interface Box

- The computer controls the models through this interface box
- Connects directly to the serial port of computers (no slot card needed)
- New 9 volt electrical system
- 8 output ports for controlling motors, lamps, & sound elements
- 8 input ports for touch, temperature, angle & light sensors
- Emergency stop button.
- Constant power supply for testing models

Control Lab Building Set



Control Lab Building Set with 527 pieces including:

- 3 motors
- 4 lamps
- 1 sound element
- 1 touch sensor
- 1 temperature sensor
- 1 light sensor
- 2 angle sensor
- Building instructions for 7 models

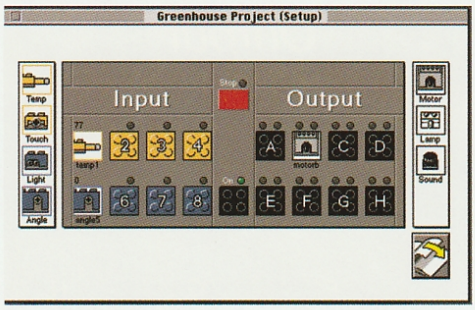
Need additional 9 volt building elements? The #9609 Technology Resource Set can be found on page 15.

Need an extra station to test models? Purchase a #9753 TECHNIC Control Center found on page 9 and 27.

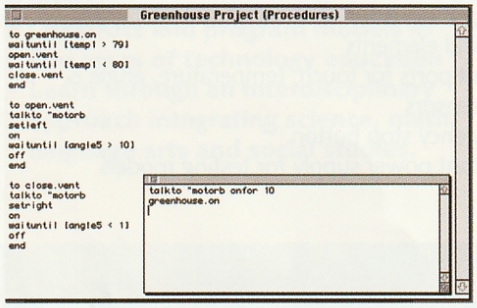
☎ To Order Call: 1-800-527-8339

CONTROL LAB 9VOLT

Control Lab Software

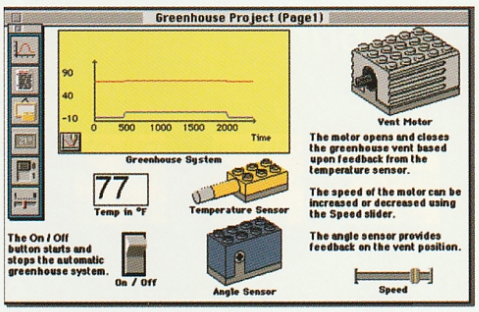


On the Setup Page students document the model connections to the interface and test the motor, lamp, sound and sensor connections.



On the Procedures Page students write and edit computer programs (called procedures) for their project.

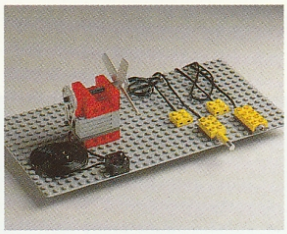
In the Command Center students type in commands and run their procedures.



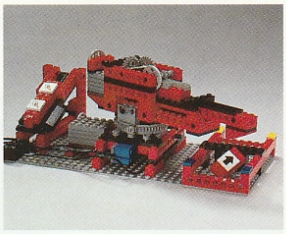
Project Pages allow the students to :

- document their work
- show pictures of the models
- monitor sensor feedback
- graph results
- develop point and click buttons and sliders to control their models

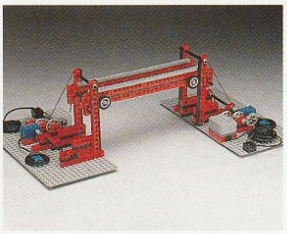
Control Lab Models



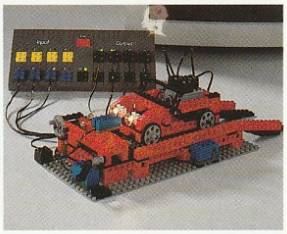
Fan



Robot Arm



Vertical lift Bridge



Dynamometer

Site Licenses Available

System Requirements

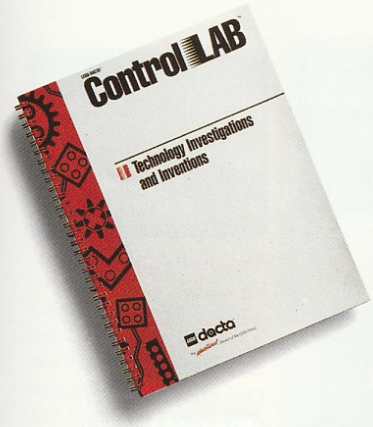
Macintosh

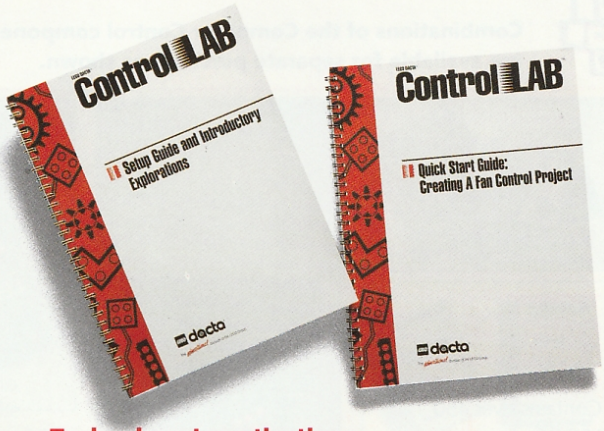
System 6.0 or higher
1 megabyte of RAM
Finder 6.0 or higher
1 serial modem or printer port available
Color or monochrome monitor
Hard disk
High density drive required
to load color version

MS-DOS

DOS 3.1 or higher
640K RAM(1 megabyte recommended)
Mouse
Mouse driver 6.24 or higher (Microsoft standard)
1 serial port (in addition to mouse port)
EGA color or monochrome monitor
Hard disk

Control Lab Curriculum Support:





Setup Guide and Introductory Explorations

- Hardware and software setup instructions
- Simple activities for learning the various components of the Control Lab system
- Assumes no previous knowledge of LEGO® or Logo components

Quick Start Guide

- For users who want to explore Control Lab materials immediately in an active, hands-on way
- Includes fast-paced, sequential activities that introduce Control Lab building programming, and documentation features
- Assumes previous knowledge of LEGO® and Logo components

Technology Investigations and Inventions

- An overview of technology education
- Assessment suggestions and project evaluation guides
- Includes the following 5 projects: Greenhouse, Color Code Reader, Motorized Vertical Lift Bridge, Pick & Place Robot Arm, and a Motorized Car and Dynamometer
- Every project includes:
  - Student copymasters with background information, design brief and building and programming ideas
  - Teacher notes
  - Interdisciplinary related concepts and extensions

Reference Guide

- Provides descriptions and examples of the Control Lab software features and commands.

9753

TECHNIC Control Center

$85.00

- Used for testing models and for pre-computer programming
- Features 3 output ports to which lamps, motors, and sound elements can be attached
- Two memories store key press sequences
- An excellent supplement for new Control Lab™
- Requires 6 "C" batteries (not included)

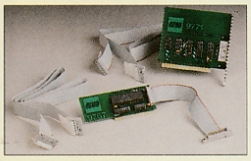
To Order Call: 1-800-527-8339

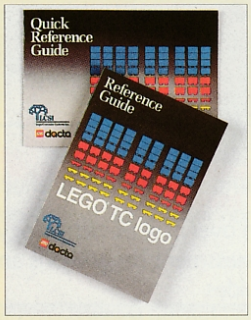
COMPUTER CONTROL COMPONENTS

Combinations of the Computer Control components are available for separate purchase as shown.

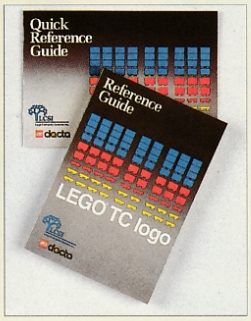
TECHNIC Control 0 Set
Item #9700
~~$170.00~~ $136.00
Contains over 450 LEGO® elements, including bricks, wheels, pulleys, gears, motors, and sensors. Includes enough elements for one building station and 2 students. Also includes building instructions for eight LEGO TC logo projects.

Interface Box & Transformer
Item #9750
~~$190.00~~ $152.00
Contains the interface box with input, output, and test ports, and a transformer to provide electrical power. The cable from the computer slot card connects to one end of the interface box. Motors, lights, and sensors from the building sets connect to the various ports.



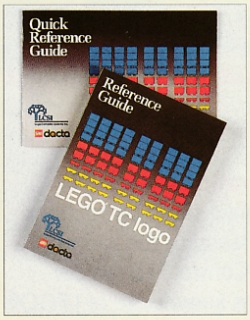


Slot Card Pack
Item #955 (Apple)
~~$164.50~~ $131.60
Item #965 (MS-DOS)
~~$164.50~~ $131.60
Contains computer slot card, cable, LEGO TC logo software, *Reference Guide* and *Quick Reference Guide*. To establish a LEGO TC logo computer station, you will need the Interface Box & Transformer (item #9750).



Reference Guide Pack
Item #957 (Apple)
~~$17.00~~ $13.60
Item #967 (MS-DOS)
~~$17.00~~ $13.60
Contains one copy each of the LEGO TC logo *Reference Guide* and the *Quick Reference Guide*.

Student Guides
Item #954 (Apple)
~~$24.00~~ $19.20
Item #964 (MS-DOS)
~~$24.00~~ $19.20
Contains two copies of three LEGO TC logo student guides: *Getting Started*, *Making Machines*, and *Teaching the Turtle*.



LEGO TC logo Software and Literature
Item #952 (Apple)
~~$120.00~~ $96.00
Item #962 (MS-DOS)
~~$120.00~~ $96.00
Contains LEGO TC logo Software, *Reference Guide*, *Quick Reference Guide*, *Teacher's Guide* and two copies of the three student guides. Sturdy storage box included.

Teacher's Guide
Item #953 (Apple)
~~$16.00~~ $12.80
Item #963
~~$20.00~~ $16.00
One copy of the 157-page LEGO TC logo *Teacher's Guide*.

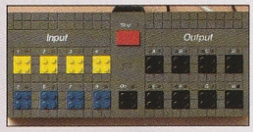
TECHNIC Control II Set
Item #1092
~~$245.00~~ $196.00
Contains 458 elements, including yellow and black building bricks, three 4.5 volt motors, two optosensors and two counting wheels, enough for one building station and appropriate for two to three students. Also includes step-by-step building instructions to build five computer controlled models. Sold separately. Requires slot card, interface box, and either LEGO TC logo or LogoWriter® Robotics software.

TECHNIC Control I Set
Item #1090
~~$166.00~~ $132.80
Contains 404 elements, including yellow and black building elements, two 4.5 volt motors, two optosensors and two counting wheels. Includes enough elements for one building station and two to three students. Also includes step-by-step building instructions for five computer controlled models. (Packed one to a set.)

TECHNIC Control I Resource Guide
Item#959
~~$75.00~~ $60.00
Contains more than 400 pages of student problem solving activities and teacher support material for control technology applications for use with the TCI Set (Item#1090).

LEGO DACTA® Control Lab Building Set
Item #9701
$221.00
Contains 527 pieces including three motors, four lamps, one sound element, one touch sensor, one temperature sensor, one light sensor, and two angle sensors. Includes enough elements for one building station and two to three students. Also includes step-by-step building instructions for seven models.

LEGO DACTA® Control System Building Set
Item #9702
$67.50
Description and photograph can be found on page 8.



LEGO DACTA Serial Interface Box & Transformer
Item #9751
$222.00
Connects directly to the serial port of the computer. Includes eight output ports for controlling motors, lamps, and sound elements and eight input ports for touch, temperature, angle and light sensors.

LEGO DACTA Cable
Item #9769
(Macintosh - 8 poles)
$23.00
Item #9768
(MS-DOS - 25 poles)
$23.00
Attaches the LEGO DACTA Interface Box to the serial port on the computer.

LEGO DACTA Control Lab Software Macintosh
Item #0066
(Macintosh - Individual)
$80.00
Item #0068
(Macintosh - Site License)
$230.00
Contains two 3.5" disks: 1 high density color; 1 double density black & white.

LEGO DACTA Control Lab Software MS-DOS
Item #0067
(MS-DOS - Individual)
$80.00
Item #0065
(MS-DOS - Site License)
$230.00
Contains one 5.25" high density disk and two 3.5" double density disks.

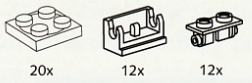
LEGO DACTA Control Lab Literature Pack
Item #0998
$73.00
Contains one copy each of the LEGO DACTA Control Lab *Setup Guide and Introductory Explorations*, *Quick Start Guide*, *Technology Investigations and Inventions* and *Reference Guide*.

Note: The Control Lab™ and Control System 9 volt electrical system is NOT compatible with our 4.5 volt LEGO® TC logo and LogoWriter® Robotics electrical system.

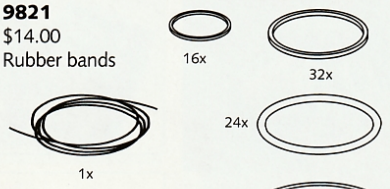
EXTRA PARTS

Extra Part Support Services and Technical Information.

9820
$5.75
Geared turntable



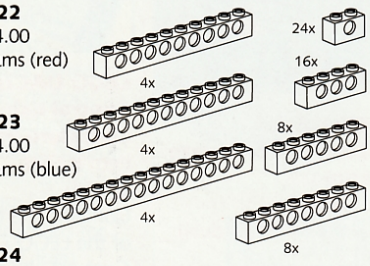
9821
$14.00
Rubber bands



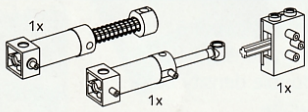
9822
$14.00
Beams (red)

9823
$14.00
Beams (blue)

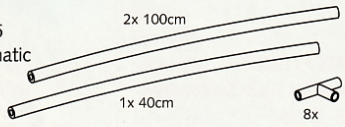
9824
$14.00
Beams (yellow)



9825
$ 7.00
Pneumatic elements



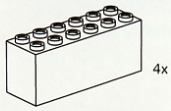
9826
$11.25
Pneumatic tubing



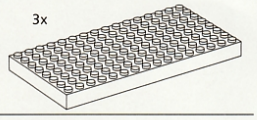
9852
$18.00
Chain link pack

9854
$ 7.00
Worm gear pack

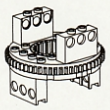
9863
$ 6.50
Weighted brick pack



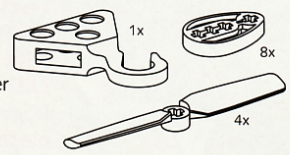
9864
$ 6.50
Green building plates



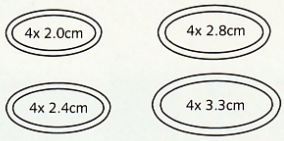
9876
$ 8.50
Turntables



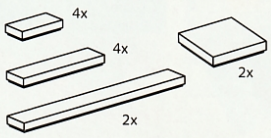
9960
$ 7.00
Crane hook, cam, propeller



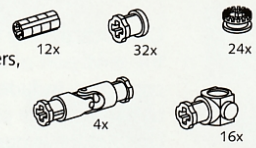
9961
$10.00
White belts



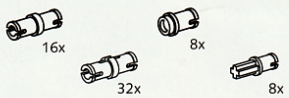
9962
$ 7.00
Flat tiles



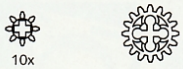
9963
$ 9.00
Axle extenders, bushings



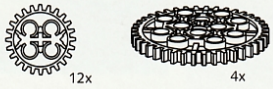
9964
$ 7.00
Connector pegs



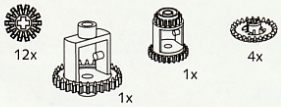
9965
$ 5.00
Gears - 8, 16 tooth



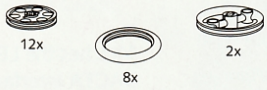
9966
$ 6.00
Gears - 24, 40 tooth



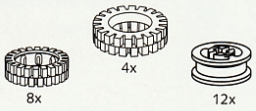
9967
$ 6.00
Differential, bevel gears



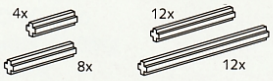
9968
$ 6.00
Pulley wheels



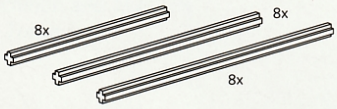
9969
$ 9.00
Tires, spoked hubs



9970
$ 6.00
Axles - short



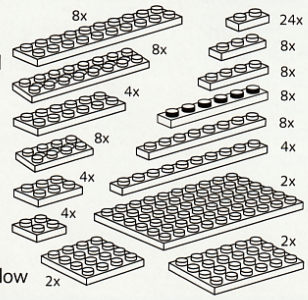
9971
$ 6.00
Axles - long



9972
$12.00
Plates - red

9973
$12.00
Plates - black

9974
$12.00
Plates - yellow



1031
$14.00
TECHNIC I building cards

1033
$14.00
TECHNIC II building cards

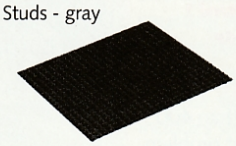
9873
$14.00
TECHNIC Control 0 building cards

9877
$ 5.50
Pneumatic building cards

9878
$25.00
Control Lab™ building cards

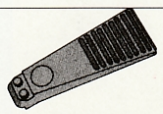
9879
$10.50
Simple Control building cards

9869
$7.95
Building Plate
24 x 24
Studs - gray



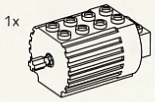
0069
$32.00
Making Connections is a 160-page teacher guide for TECHNIC and TECHNIC Control projects. Includes 34 lesson plans and 16 physical science worksheets.

9892
$ 4.00
Brick Separator

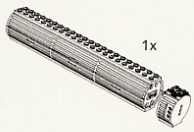


Electric Components

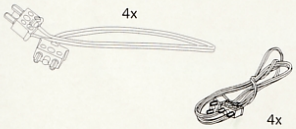
9859
$19.00
Motor - 4.5 volt



9860
$11.25
Battery box with switch - 4.5 volt

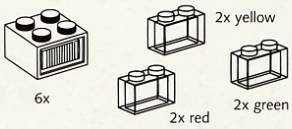


9861
$19.00
Connecting leads - 4.5 volt

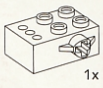


9865
$23.00
Counting Disk Optosensor - 4.5 volt

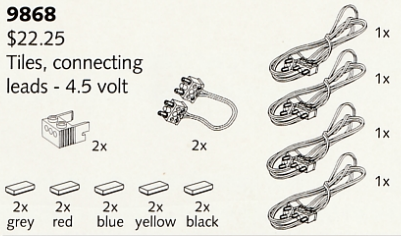
9866
$13.00
Lights - 4.5 volts



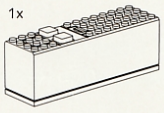
9867
$11.00
Touch sensor - 4.5 volt



9868
$22.25
Tiles, connecting leads - 4.5 volt

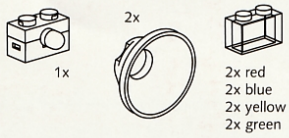


9831
$14.50
Battery box with switch - 9 volt

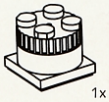


9883
$16.00
Motor - 9 volt

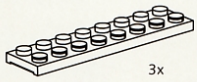
9830
$ 8.00
Translucent bricks, lamp - 9 volt



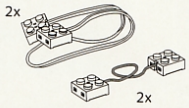
9885
$ 9.00
Sound element - 9 volt



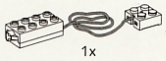
9886
$ 5.00
Conducting plates - 9 volt



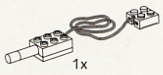
9887
$18.50
Connecting leads - 9 volt



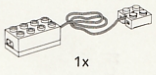
9888
$16.00
Touch sensor - 9 volt



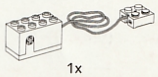
9889
$24.00
Temperature sensor - 9 volt



9890
$24.00
Light sensor - 9 volt



9891
$24.00
Angle sensor - 9 volt



Technical Information

4.5VOLT System

The LEGO DACTA® 4.5 volt interface box works with Apple IIe, Apple IIGS, and compatible computers, and the IBM PC and other MS-DOS computers, and connects to a parallel slot card installed inside the computer. The interface box is designed to a high standard of safety, including optically isolated circuits and short circuit protection. An on-board emergency STOP button turns off electrical power to all output slots if necessary.

The LEGO DACTA 4.5 volt touch sensor consists of a special brick containing a spring-loaded on/off switch and a smooth protrusion which acts as a pushbutton.

The LEGO DACTA 4.5 volt optosensor functions as a binary electromagnetic radiation sensor, and is sensitive to sharp changes between dark and bright conditions over a broad spectrum of radiation frequencies, including visible light and infrared radiation. The optosensor also responds to the movement of a black and white counting wheel by sensing changes in reflected radiation from an on-board infrared source.

The LEGO DACTA 4.5 volt motor operates on direct current supplied from three "C" batteries or from the computer interface box. It uses approximately 0.1 amp and runs at approximately 6000 r.p.m. when operating with no load. When stalled, the motor uses approximately 1 amp.

9VOLT System

The LEGO DACTA 9 volt serial interface box connects to the serial port of Macintosh and MS-DOS computers. The interface box is designed to the same high safety standards as the 4.5 volt interface box, and includes an on-board emergency STOP button.

The LEGO DACTA 9 volt touch sensor functions similarly to the 4.5 volt touch sensor.

The LEGO DACTA 9 volt temperature sensor is an analog sensor which can measure and detect changes in temperature from -20° C to + 50° C to within 0.2° C.

The LEGO DACTA 9 volt light sensor functions as an analog electromagnetic radiation sensor, and is sensitive to a wide frequency range, including visible light and infrared radiation. The sensor reports a number ranging from 0 (darkness) to 100 (very bright).

The LEGO DACTA 9 volt angle sensor reports both increasing and decreasing angular displacement (the amount of turning) in increments of 22.5 degrees or 1/16th of a revolution.

The LEGO DACTA 9 volt motor operates on direct current supplied from six "C" batteries or from the LEGO DACTA serial interface box. It uses approximately 0.04 amp and runs at approximatel 4,000 r.p.m. when operating with no load. When stalled, the motor uses approximately 0.5 amp.

COMPUTER CONTROL PRODUCTS FOR SCIENCE, MATH AND TECHNOLOGY
FOR GRADES 5 AND UP

LEGO dacta
The educational division of the LEGO Group

LEGO DACTA® Control System Grades 5-6

LEGO DACTA Control System integrates math and science, as students build their own data collecting models and control them with a computer. This product combines LEGO® elements, a Macintosh or MS-DOS computer, a special version of the Logo programming language, and curriculum materials. The LEGO DACTA Control System product provides a hands-on approach to learning math and science concepts.

Concepts Covered:
- Linear motion
- Work, power, energy
- Generating electricity
- Computation, estimation, measurement
- Graphing
- Pattern recognition

Control System Models Include:
- Dactasaur
- Robotrike
- Elevator
- Generator
- Hand-operated winch

The Control System Starter Pack (pictured above) includes: Serial Interface Box and Cable, Software (MS-DOS or Macintosh), LEGO DACTA Building Set with 220 pieces, an Angle and Light Sensor, and Curriculum Support Materials.

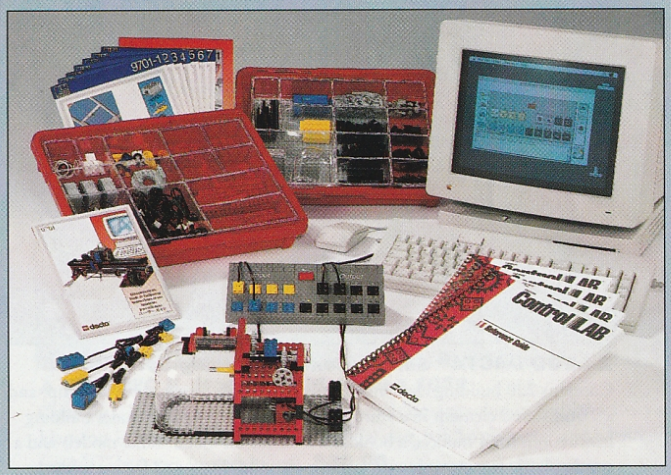
976 Control System Starter Pack for Macintosh **$475.00**
977 Control System Starter Pack for MS-DOS **$475.00**
979 Control System Starter Pack and Site License for Macintosh **$600.00**
980 Control System Starter Pack and Site License for MS-DOS **$600.00**

When purchasing a site license, order numbers with an * for each additional work station. (Mac users select item 9769, MS-DOS users select item 9768)

Combinations of the Computer Control components for LEGO DACTA Control System are available for separate purchase as listed:

* **9751** Serial Interface Box and Transformer **$227.00**
* **9702** Simple Control Building Kit **$69.00**
* **9890** Light Sensor **$25.00**
* **9891** Angle Sensor **$25.00**
* **9768** Serial Cable for MS-DOS **$26.00**
* **9769** Serial Cable for Macintosh **$26.00**
0065 Control System Software and Site License (MS-DOS) **$230.00**
0066 Control System Software (Macintosh) **$82.50**
0067 Control System Software (MS-DOS) **$82.50**
0068 Control System Software and Site License (Macintosh) **$230.00**
0978 Control System Curriculum Materials **$32.00**

LEGO DACTA® Control Lab™ Grades 7-12



LEGO DACTA Control Lab integrates technology with math and science, as students build their own working models and control them with a computer. By combining LEGO® elements, a Macintosh or MS-DOS computer, a special version of the Logo programming language, and curriculum materials, LEGO DACTA Control Lab enables students to learn important technology concepts with open-ended design projects.

Technology Concepts	Corresponding Control Lab Projects
Bio-related Technology	Greenhouse
Communication	Color Code Reader
Construction	Motorized Vertical Lift Bridge
Manufacturing	Pick and Place Robot Arm
Transportation	Motorized Car and Dynamometer

The Control Lab Starter Pack (pictured above) includes: Serial Interface Box and Cable, Software (MS-DOS or Macintosh), LEGO DACTA Building Set with 527 pieces, and Curriculum Support Materials.

942 Control Lab Starter Pack for Macintosh **$625.00**
943 Control Lab Starter Pack for MS-DOS **$625.00**
944 Control Lab Starter Pack and Site License for Macintosh **$750.00**
945 Control Lab Starter Pack and Site License for MS-DOS **$750.00**

When purchasing a site license, order numbers with an * for each additional work station. (Mac users select item 9769, MS-DOS users select item 9768)

Combinations of the Computer Control components for LEGO DACTA Control Lab are available for separate purchase as listed:

* **9751** Serial Interface Box and Transformer **$227.00**
* **9701** LEGO DACTA Technology Set **$230.00**
* **9768** Serial Cable for MS-DOS **$26.00**
* **9769** Serial Cable for Macintosh **$26.00**
0065 Control Lab Software and Site License (MS-DOS) **$230.00**
0066 Control Lab Software (Macintosh) **$82.50**
0067 Control Lab Software (MS-DOS) **$82.50**
0068 Control Lab Software and Site License (Macintosh) **$230.00**
0998 Control Lab Curriculum Materials **$75.00**

System Requirements for LEGO DACTA Computer Control Products

Macintosh
System 6.0 or higher
1 megabyte of RAM
Finder 6.0 or higher
1 serial modem or printer port available
Color or monochrome monitor
Hard Disk
High density drive required to load color version

MS-DOS
DOS 3.1 or higher
640K RAM (1 megabyte recommended)
Mouse
Mouse driver 6.24 or higher (Microsoft standard)
1 serial port (in addition to a mouse port)
EGA color or monochrome monitor
Hard disk

Please note: Computer not included.

CUSTOMER SUPPORT

Technical Support
Having difficulty with a component of LEGO DACTA® equipment? Call 1-800-527-8339 to consult with a trained LEGO Dacta representative and receive free on-line assistance.

Training
Would you like for LEGO Dacta to provide specialized instruction to a group? LEGO Dacta educational specialists are available for hands-on workshops and inservice training.

Videocassettes
Would you like to see LEGO DACTA® Control Lab™, TECHNIC Simple Machines, or LEGO® TC logo in action? LEGO Dacta has introductory videotapes available free to educators on a loan basis.

Literature & Mailing List
Would you like to receive up-to-date information on LEGO DACTA materials or obtain an extra copy of this brochure for yourself or a friend? Please return the postcard found inside this brochure or call 1-800-527-8339.

Grant Proposals
Are you having difficulty obtaining funds for purchasing LEGO DACTA materials? Consider writing a grant proposal to a local or national funding agency. LEGO Dacta can provide grant proposal assistance and has a free tip sheet available upon request to first-time grant proposal writers.

Extra Parts
Are your students asking for additional motors, sensors, or gears? Over 50 different extra part sets are available for purchase separately (see pages 30 & 31).

How to Order
LEGO DACTA Science and Technology products are available direct from LEGO Dacta and from selected educational product dealers. An order form is included in this brochure for your convenience. Purchase orders must accompany all orders, except when paying by credit card. LEGO Dacta estimates shipping & handling costs to be approximately 5% of your total order.

All prices for LEGO DACTA products in this catalog are valid through December 10, 1994. All prices listed in this catalog are suggested retail prices. LEGO Dacta fully supports products that carry the LEGO DACTA® brand name.

LEGO dacta
The educational division of The LEGO Group

LEGO Dacta
555 Taylor Road
P.O. Box 1600
Enfield, CT 06083-1600
1-800-527-8339
Fax: (203) 763-2466

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ORDER FORM 1994

		Page #	Quantity	School Price	Total
TECHNIC Mini-Series, Introduction to Simple Machines					
9610	Gear Set	5		$ 12.50	
9620	Teacher Guide —- Gears	5		5.00	
9640	**Mini-Series Classroom Set —- Gears (12 #9610 & 1 #9620)**	4		150.00	
9612	Lever Set	5		12.50	
9622	Teacher Guide —- Levers	5		5.00	
9642	**Mini-Series Classroom Set —- Levers (12 #9612 & 1 #9622)**	4		150.00	
9614	Pulley Set	5		12.50	
9624	Teacher Guide —- Pulleys	5		5.00	
9644	**Mini-Series Classroom Set —- Gears (12 #9614 & 1 #9624)**	4		150.00	
TECHNIC I - Simple Machines					
1030	TECHNIC I, Simple Machines (includes Activity Cards)	6		$ 60.00	
1035	Teacher's Guide for TECHNIC I	6		12.00	
0999	Simple Machines Curriculum (to accompany set #1030)	6		26.00	
9603	TECHNIC I Activity Center	7		100.00	
0704	**TECHNIC I Classroom Pack (10 #1030 & 1 #9603) 10% Off**	7		630.00	
LEGO DACTA® Simple Control System 9 Volt					
9702	Simple Control Building Set	8		$ 67.50	
9703	Simple Control Activity Pack	8		44.00	
9753	TECHNIC Control Center	9		85.00	
TECHNIC II - Motorized Transmission 4.5 Volt					
1032	TECHNIC II Motorized Transmission - (incl. Activity Cards)	10		$ 80.00	
1036	Teacher's Guide for TECHNIC II	11		12.00	
0917	TECHNIC II Activity Binder	11		36.50	
0069	Science Museum of MN Curriculum Guide	30		32.00	
0929	**TECHNIC II Classroom Pack (10 #1032 & 1 #917) 10% Off**	11		752.85	
Pneumatics - Air Systems					
9604	Pneumatics Set	12		$ 34.00	
9606	Pneumatics Teacher's Guide	13		17.00	
0919	**Pneumatics Classroom Pack (10 #9604 & 1 #9606) 10% Off**	13		321.30	
Additional TECHNIC Sets 4.5 Volt & 9 Volt					
9605	TECHNIC Teacher's Resource Set (4.5v)	14		$206.00	
1038	TECHNIC Buggy (4.5v)	14		63.50	
1039	TECHNIC Manual Control (4.5v)	14		63.50	
0971	Gears Overhead Transparency Set	15		20.00	
0972	Levers Overhead Transparency Set	15		15.00	
9609	Technology Resource Set (9v)	15		199.00	
LEGO® TC logo (Special Sale Prices) 4.5 Volt					
951	Apple - LEGO TC logo Starter Pack	16		$452.00	
966	MS-DOS LEGO TC logo Starter Pack	16		456.00	
LogoWriter® Robotics (Special Sale Prices) 4.5 Volt					
0900	LogoWriter Robotics Site License - Apple	18		$499.00	
0902	LogoWriter Robotics Site License - MS-DOS	18		499.00	
0911	LogoWriter Robotics Expansion for Site License - Apple	19		130.00	
0912	LogoWriter Robotics Expansion for Site License - MS-DOS	19		130.00	
0903	LogoWriter Robotics Lab Pack - Apple 5.25"	18		349.00	
0904	LogoWriter Robotics Lab Pack - Apple 3.5"	18		349.00	
0905	LogoWriter Robotics Lab Pack - MS-DOS 5.25"	18		349.00	
0906	LogoWriter Robotics Lab Pack - MS-DOS 3.5"	18		349.00	
0907	LogoWriter Robotics Individual Set - Apple 5.25"	18		199.00	
0908	LogoWriter Robotics Individual Set - Apple 3.5"	18		199.00	
0909	LogoWriter Robotics Individual Set - MS-DOS 5.25"	18		199.00	
0910	LogoWriter Robotics Individual Set - MS-DOS 3.5"	18		199.00	
0913	LogoWriter Robotics Reference Guide			33.20	
0914	LogoWriter Robotics Integrated Projects Booklet			16.90	
0915	LWR TC-0 Control Pack - Apple (1 #9767, 1 #9750, 1 #9700)	19		354.00	
0916	LWR TC-0 Control Pack - MS-DOS (1 #9771, 1 #9750, 1 #9700)	19		354.00	
				Subtotal	

TECHNIC Control I (Special Sale Prices) 4.5 Volt		Page #	Quantity	School Price	Total
958	Apple - TECHNIC Control I Starter Pack	20		$521.60	
968	MS-DOS - TECHNIC Control I Starter Pack	20		521.60	
0002	TECHNIC Control I - Special Upgrade Offer	21		298.80	
LEGO DACTA® Control System (Science & Math) 9 Volt					
0976	Macintosh - Control System Starter Pack	23		$450.00	
0977	MS-DOS - Control System Starter Pack	23		450.00	
0979	Macintosh - Control System Starter Pack & Site License	23		600.00	
0980	MS-DOS - Control System Starter Pack & Site License	23		600.00	
LEGO DACTA® Control Lab™ (Technology) 9 Volt					
0942	Macintosh - Control Lab - Starter Pack	27		$599.00	
0944	Macintosh - Control Lab - Starter Pack & Site License	27		750.00	
0943	MS-DOS - Control Lab - Starter Pack	27		599.00	
0945	MS- DOS - Control Lab - Starter Pack & Site License	27		750.00	
9753	TECHNIC Control Center	27		85.00	
Components (please list from pages 28 & 29)					
Extra Parts (please list from pages 30 & 31)					

Subtotal Page 2	
Subtotal Page 1	
Shipping 5%	
TOTAL	

PLEASE DIRECT ORDERS AND QUESTIONS TO:

LEGO Dacta
555 Taylor Road
Enfield, CT 06083-1600
Phone: (800) 527-8339
Fax: (203) 763-2466

BILL TO:

Name _____

School _____

Street _____

City _____ State _____ Zip _____

Order Date _____ Tel. _____

Please charge to: ❑ VISA ❑ MASTERCARD

_____ Exp. Date _____

Authorized Signature _____

SHIP TO:

Name _____

School _____

Street _____

City _____ State _____ Zip _____

Attached Purchase Order # _____

Federal Tax I.D.# _____

Prices honored through December 10, 1994

All orders other than VISA or MASTERCARD must be accompanied by a Purchase Order.